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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,903	04/02/2001	Kevin R. Hudson	10004101-1	2179

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EXAMINER

PHAM, THIERRY L

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/824,903	Applicant(s) HUDSON, KEVIN_R.	
	Examiner Thierry L. Pham	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- This action is responsive to the following communication: an Amendment filed on 9/13/05.
- Claims 1-2 and 4-22 are pending; claim 3 has been canceled.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 4-9, 12-13, 15-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Lin (U.S. 6404511).

Regarding claim 1, Lin discloses a method for calculating look-up tables (LUT, fig. 6) for a cluster of printers (clustered printers 30a-30c, fig. 1), comprising:

- determining a least dynamic printer (reference printer 30a, abstract, cols. 9-11) in the cluster; and
- calculating corrected input values (calculating input values from input device 10, fig. 1, cols. 9-11) required to normalize an output (normalized by transfer functions, fig. 7) of at least one non-least dynamic printer (non-reference printers, fig. 1 and cols. 9-11) in the cluster. Lin explicitly teaches a technique for calibrating non-reference to a reference printer (i.e. calibrating non-least dynamic printer to a least dynamic printer as disclosed by applicant's invention).

Regarding claims 2 & 4, Lin further discloses the method of claim 1, wherein transfer functions are calculated for each primary color (primary colors such as CMYK, col. 4, lines 15-25, fig. 7, abstract and col. 10, lines 44-60).

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Regarding claim 5, Lin further discloses the method of claim 1, additionally comprising calculating transfer functions (transfer functions 23a-23c as shown in fig. 7) for each printer in the cluster (col. 12, lines 3-67).

Regarding claim 6, Lin further discloses the method of claim 1, additionally comprising organizing the corrected input values into look-up tables (LUT, cols. 9-11).

Regarding claim 7, Lin further discloses a method for calibrating a cluster of printers, comprising:

- (a) printing a calibration target (calibration sheets, col. 10, lines 1-10) with each printer in the cluster;
- (b) measuring (measure device 60, fig. 3, col. 6, lines 49-67) each calibration target to produce measurement data;
- (c) calculating transfer functions (transfer functions, fig. 7) for each printer in the cluster;
- (d) determining a least dynamic (reference printer 30A, cols. 9-11) printer in the cluster;
- (e) calculating corrected input values (calculating input values from input device 10, fig. 1, cols. 9-11) required to normalize (normalized by transfer functions, fig. 7) output of non-least dynamic printers (calibrating non-reference printers 30B-30C reference printer 30A based on results obtained from scanned images, fig. 7, cols. 9-10) in the cluster;
- (f) organizing the corrected input values into look-up tables (LUT, cols. 9-11); and
- (g) sending (figs. 6-7) the look-up tables to each printer within the cluster.

Regarding claim 8, Lin further discloses the method of claim 7, wherein the measuring is performed by sensors (measure device 62, fig. 3b) in a paper path of each printer.

Regarding claim 9, Lin further discloses the method of claim 7, wherein the measurement data is expressed in a CIELab (CIELab, col. 11, lines 1-20) context.

Regarding claim 12, Lin further discloses the method of claim 7, additionally comprising incorporating the look-up tables (LUT, cols. 9-11) into a color data flow of each printer (fig. 7) in the cluster.

Regarding claim 13, Lin further discloses a method of calibrating (abstract) a cluster of printers, comprising: printing a calibration target (fig. 6) with each printer in the cluster; measuring (measure device, fig.3b) each calibration target to produce measurement data; calculating transfer functions (transfer functions, fig. 7) for each primary color and for each printer in the cluster; determining a least dynamic printer (reference printer, cols. 9-11) in the cluster with respect to each primary color; calculating corrected input values required to normalize (normalized by transfer functions, fig. 7) output of non-least dynamic printers (non-reference printers 30B-30C, fig. 7) in the cluster to the least dynamic printer (calibrating non-reference printers to reference printer, col. 9-10) in each cluster with respect to each primary color; organizing the corrected input values into look-up tables (LUT, cols. 9-11); and sending (figs. 6-7) the look-up tables to each printer within the cluster for inclusion in a color data flow.

Regarding claim 15, Lin further discloses a cluster of printers, comprising: at least two printers (output devices fig. 1 & fig. 7); a transfer function (transfer function 23a-23c, fig. 7) calculator to derive a transfer function for each printer with respect to at least one color; a least dynamic response selector (select printer 30A as a reference printer from clustered printers 30A-30C, fig. 7, col. 9, lines 40-42) to determine a least dynamic printer from within the cluster of printers for at least one color; a normalizer (normalized by transfer functions, fig. 7) for calculation of corrected input values required to normalize more dynamic printers output with respect to the least dynamic printer; and a look-up table(LUT, cols. 9-11) assembler to organize the corrected input values into look-up tables.

Regarding claim 16, Lin further discloses the method of claim 15, additionally comprising a file transfer routine (transfer via communication bus, fig. 1 and fig. 4) to send the look-up tables to each printer within the cluster of printers.

Claims 17-19 correspond to claims 7-12 and/or combination thereof except computer readable memory medium for storing program is claimed rather than printing system/method or data output apparatus. All computers have some type of computer readable memory medium (storage device, fig. 2) for storing computer programs, hence claims 17-19 would be rejected using the same rationale as in claims 7-12.

Regarding claims 20-21 recite limitations that are similar and in the same scope of invention as to those in claims 15-16 above; therefore, claims 20-21 are rejected for the same rejection rationale/basis as described in claims 15-16.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-11, 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin as described in claims 7, 13, and/or 20 above, and in view of Ikeda et al (U.S. 6172771).

Regarding claim 10-11 and 22, Lin does not expressly disclose the calculating steps can be performed either on a master printer and/or print server.

Ikeda, in the same field of endeavor for printer's calibration, teaches calculating steps can be performed either on a master printer and/or print server (calibration can be performed either on a printer itself or via a printer server, fig. 6-8, 12, col. 5-6 and col. 10, lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Lin as per teachings of Ikeda because of a following reason: (1) calibration system can be incorporated either in printer itself and/or via a printer server; therefore, provides more flexibility/portability for the users/operators; (2) to reduce the differences (i.e. gradation characteristics) of outputted images produced by multiple printers (col. 6, lines 5-67).

Therefore, it would have been obvious to combine Lin with Ikeda to obtain the invention as specified in claim 10-11.

Regarding claim 14, Ikeda further discloses wherein the measuring is performed by sensors in a paper path of each printer (fig. 7, col. 6-7).

Response to Arguments

Applicant's arguments filed 9/13/05 have been fully considered but they are not persuasive.

- Regarding claims 1, 4, 7, and 15, the applicant argued the cited prior art of record (US 6404511 to Lin et al) fails to teach and/or suggest determining *a least dynamic printer* in the cluster. The applicant also indicated a “*least dynamic printer*” is defined as a printer that is having a least/less dynamic range and/or having the gamut value that is not fully printable.

In response, the examiner is fully disagreed with the applicant's assertions/arguments. Lin clearly teaches any printers (printer 30A-30C as shown in fig. 1) can be selected as a reference printer (e.g. printer 30A, fig. 7, and herein is interpreted as a least dynamic printer by the examiner) and any non-reference printers (e.g. printers 30B-30C, fig. 7) can be normalized/calibrated to have same print quality as reference printer by implementing a look-up table values generated by measuring device. Lin explicitly teaches a look-up tables is generated by scanning a color calibration sheet printed by the printers (printers 30A-30C, fig. 1, col. 4, lines 15-28) and a color gamut is measured for each printer (col. 4, lines 15-28 and col. 6, lines 55-67) to determine how a particular color is produced by that printer in response to its input signal (col. 9, lines 44-51). Lin also taught that a gamut mapping strategy (e.g. s/n 09/050867, col. 9, lines 8-10) for a given printer is known and widely available (e.g. s/n 09/050867, which is correspond to US patent No. 6185004). Lin also teaches a method of determining which printer's gamut is out of range, and to provide a method of compensating such range (col. 2, lines 9-32 and col. 3, lines 15-40). Importantly, any printers (printers 30A-30C, fig. 1) can be selected as a reference printer, including printer having less dynamic gamut range and any non-reference printers can be normalized/calibrated to a reference printer (abstract and col. 10, lines 55-60).

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- Regarding claims 4, 13, and 15, the applicant argued the cited prior art of record (US 6404511 to Lin et al) fails to teach and/or suggest a least dynamic printer is determined for each primary color.

In response, the examiner is disagreed with the applicant's assertion/arguments. Lin explicitly teaches a least dynamic printer is determined for each primary color (abstract and 9, lines 65 to col. 10, lines 34).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 6185004 to Lin et al, teaches a self-calibration for color image reproduction system including gamut mapping strategy.
- U.S. 6256111 to Rijavec, teaches a method of calibrating a printing system within a clustered environment.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

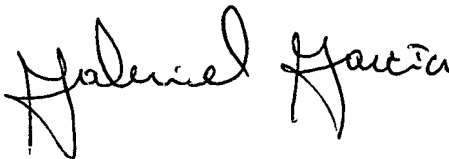
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thierry L. Pham whose telephone number is (571) 272-7439. The examiner can normally be reached on M-F (9:30 AM - 6:00 PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571)272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thierry L. Pham



GABRIEL GARCIA
PRIMARY EXAMINER